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(54) Title: IMPROVED METHODS AND MATERIALS FOR REDUCING PRODUCTION OF ABERRANT PRODUCTS DURING RNA SYNTHESIS

(57) Abstract: The mutant T7, T3 and SP6 RNA polymerase enzymes have a number of novel properties that would be desirable for those who wish to use the phage RNAP to synthesize homogeneous RNA products. These includes: reduced synthesis of aberrant products on templates that have protruding 3' ends in the non-template strand, decreased addition of a non-templated nucleotide to the 3' end of transcript; increased yields of products on templates that terminate in a G:c-rich context. The mutations include deletions at positions 172 and 173 of the T7 RNA polymerase, deletions at positions 140-143 of the SP6 RNA polymerase and deletions at positions 173 and 174 of the T3 RNA polymerase.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/39087

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C07K 1/00; C12Q 1/68, 1/34; C12P 19/34; C07H 21/02

US CL : 530/350; 435/6, 18, 91.2; 536/23.1

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 530/350; 435/6, 18, 91.2; 536/23.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ---	LYAKHOV et al. Mutant bacteriophage T7 RNA polymerases with altered termination properties. J. Mol. Biol. 1997, Vol. 269, pages 28-40, see entire document.	1-6, 8-14
Y		7, 15
X ---	GOPAL et al. Characterization of structural features important for T7 RNAP elongation complex stability reveals competing complex conformations and a role for the non-template strand in RNA displacement. J. Mol. Biol. 1999, Vol 290, pages 411-431, see entire document.	1-5, 8-13
Y		6, 7, 14, 15
X, P	EP 1 403 364 A1 (NIPPON GENETECH CO. LTD.) 19 December 2002 (19.12.2002), page 7, lines 5-55.	1-15
Y,P	US 6,524,828 B1 (LIAO et al) 25 February 2003 (25.02.2003), see entire document.	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	
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"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

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**INTERNATIONAL SEARCH REPORT**

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**Continuation of B. FIELDS SEARCHED Item 3:**

EAST, DERWENT, MEDLINE, BIOSIS, CAPLUS

search terms: RNA, polymerase, mutants, variants, polymorphisms, alleles, T7, SP6, T3, 173, 174, 172, 140, 143, deletion.